

# CHAMBERS'S JOURNAL

OF

POPULAR

LITERATURE, SCIENCE, AND ART

Fifth Series

ESTABLISHED BY WILLIAM AND ROBERT CHAMBERS, 1832

No. 405.—VOL. VIII.

SATURDAY, OCTOBER 3, 1891.

PRICE 1½d.

## A SOLDIER AND A GENTLEMAN.\*

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CHAPTER I.—AN EVENING OF ADVENTURE.

It was an unusually hot week of the uncertain month of July. The heavens were as brass, and the elements seemed melting with fervent heat. There was not stirring anywhere a breath of air to suggest coolness. The leaves of the trees in the parks looked scorched, the grass was parched and brown, and the ornamental waters appeared stagnant and unwholesome. Throughout all London the bricks were baking, and the people sweltering in the direct and reflected sunshine; but nowhere was the heat more fetid and stifling than about Soho. The atmosphere was charged not only with the exhalations of a poor and densely-packed population, but also with the odours of neglected refuse, vegetable and other, in the courts and the streets. In the early evening, women with babies and women without, neither very much tied nor very much buttoned, sat on door-steps, or leaned against door-posts with their arms lazily crossed; while half-clad children played and shouted and perspired in the gutters or ran in and out of the shady courts; and hulking or evil-looking men, with pipes in their mouths and their hands in their pockets, hung about corners and the swinging doors of public-houses. In Dean Street the only active persons to be seen were two or three costermongers with barrows of fish or fruit, who, with their arms and their throats bare, urged their laggard donkeys as feelingly and yelled as lustily as usual; and a melting postman in unofficial straw hat who urged his weary rat-tat round.

There was another, a tall, well-built young man, who emerged from one of the houses, a

miracle of coolness. He was dressed in a tweed suit and a round hat, and he carried a pair of gloves and a little cane which was much too short to walk with. He was turning down the street with a swinging stride when he observed the postman. He returned to the door from which he had come, and waited till the postman approached. 'Anything,' he asked, 'for George Ferrers?'

The postman carelessly glanced at the address of two or three of his letters, said 'No,' and passed on.

George Ferrers jerked out a nod of acknowledgment of his courtesy, tucked his little cane under his arm, set his hat a little more jauntily over his eye, strode away, his step ringing clear on the pavement. He was evidently not in the calmest of tempers. Once or twice he muttered angrily to himself, and beat his thigh with his cane. He swung right on his way, elbowing aside without compunction the hulking loafers, who turned with a furious 'Wot the—!' which became a cheerful 'All right, gov'nor,' when they saw the tall muscular figure. The children stopped their play to look up at him, and the women glanced at him with approval and seductiveness.

'Fine man, ain't he?'—'Looks like a officer'—'There's a gen'lman for yer!' were some of the least questionable of the comments made on his appearance—comments which his quick ear caught, and which somewhat soothed his temper; for to the average healthy man there is nothing more agreeable than the admiration of woman-kind. He twirled his fair curling moustache with an air, fastened, in spite of the heat, one

button of his coat, the better to show off the lines of his figure, squared his shoulders and swelled his chest, and marched with something of that bow of the leg which marks the matured Lifeguardsman. Through the squalid swarming streets of Soho and St Giles he thus made his way, and arrived in St Martin's Lane, crossing which, he found himself at the corner of Long Acre. There he paused, and debated with himself a moment, slowly twisting the ends of his moustache. He was hungry. Should he content himself with bread-and-cheese and a glass of ale in a tavern? Or, should he deny himself the ale, and have something more staying and nutritious in the *à-la-mode* beef-shop at his elbow? Though he had what he called 'a thirst' upon him, he decided for the diet without drink, and turning on his heel, he entered the shop *à-la-mode*.

It is scarcely fair to expose all the base shifts to which patient merit may be reduced, and how it has often parsimoniously to consider the purchasing power of a penny. Let it suffice to say that George Ferrers made a tolerable meal, to which a piquant relish was imparted by the kind looks of the plump, though somewhat untidy, serving-girl behind the counter. The box in which he sat to consume his viands was inadequate. The seat was narrow, and his knees touched the bench on the other side of the little table. A little man might have enjoyed in it complete privacy except from the overseeing eye of the counter-girl; but George Ferrers could conceal no more than his plate and a few buttons of his waistcoat. He sat so high that he could see into all the other boxes, and he felt that his dominant height had a depressing effect on the dirty carters—theirself bulky men—and the nondescript loafers who were feeding in them. He hurried, therefore, through his meal, paid for it—not forgetting to tip the plump serving-girl, who responded with a surprised, 'Thank you, sir'—and returned into the street.

He chinked his change in his hand, and dropped it into his pocket with as much of a pang of anxiety as his cheerful spirit would permit him to feel. The few pieces of silver and copper—making one-and-ninepence in all—were the amount of his pecuniary resources, and he had no immediate prospect of more. Yet he must have a smoke. He had had his appetite for food but half allayed; for it took a good deal to keep his continent of body in condition; but he knew he would feel satisfied if he had a pipeful of tobacco. Turning down St Martin's Lane, therefore, he entered a tobacconist's and purchased a half-ounce of his favourite mixture. Then filling and lighting his pipe, he strolled serenely and gallantly down to Trafalgar Square. He leaned over the parapet, knitted his brows, smoked hard, and asked himself what he should do.

He was where he had often been of an evening before. He leaned on the parapet and looked away down over the silent fountains into Whitehall, to that front of the Horse Guards where, in other days, he had often appeared in all the glittering panoply of war, on his black horse, in steel cuirass and gorgeous helmet. England had been to him a pretty hard step-mother. She

had taken twelve good years of his life; had marched and counter-marched him; had sent him to the Soudan—whence he had returned but a year ago, a gaunt and sun-burnt member of the famous Camel Corps—and had then turned him adrift and shown no further interest in him. He did not complain: he was too well drilled a soldier and of too cheerful a nature to do that; but as he let his eye rove round, still asking himself in the backward of his thought what he was going to do, he resented the fat and prosperous appearance of the crowd surging and perspiring east and west, and north and south, in loose coats and white waistcoats. He wondered how they would look if they were collected into a regiment and marched into the desert, where there was only a modicum of the tinned 'junk' of Australia or Chicago to eat, and not a drop of water to drink; and if, when choking and cracking with thirst, a horde of fuzzy-headed, gigantic black fiends came howling down upon them, thrusting at them with shovel-headed spears, and hacking mightily at them with huge crusader swords. Of what use would they be in a trial of pluck, strength, and endurance? And yet he reckoned there was not one but had gold and silver in his pocket, while he had only one-and-sevenpence, and did not know where to get another shilling. Of course he had a father, a farmer in a dale of Cumberland; but he was not going to beg money of the old man—no, not if he were starving. Trafalgar Square, he had heard, is the centre of London, and London is the centre of the world; therefore, he stood in the very heart, or bull's eye, of the life, wealth, and business of the world. He was well placed, then, and ought to get on. Yet why had he received no answer to any one of his own advertisements, or of his replies to the advertisements of others? He could not guess, unless it were that for a big fellow with curling moustaches and long legs, who had served twelve years in the Life Guards, there was no place in civilian life.

So he asked himself again what he was going to do. He was resolved he would not go to his lodging that night—the dingy, frowsy garret in Soho—without having settled something one way or another about his future. He had heard it said, 'Adventures are to the adventurous'; and since an adventure had not sought him out, he thought he had better seek out an adventure. Which way should he go?—North, south, east, or west? He stooped—regardless of the curious side-looks of the passers-by—set his little cane erect on the pavement and let it go. It fell at once to the west; and to the west—into Clubland—he at once set off. His pipe was empty and his mouth was dry: he let his tongue 'click' against his palate, to assure himself how much he was in need of a drink. He thought he might indulge himself to the extent of a half-pint, since he must presently—he laughed—run against a frail old gentleman who needed a prop for his declining years, or a lonely dowager who longed to adopt a son; and he knew himself as strong as a tree and as active and willing as a horse.

The sun had set with the cloudless glow of a furnace behind the further end of Pall Mall, and the stifling breathless shades of night seemed

to rise from the ground as much as they sank from the sky, as he left Trafalgar Square.

'Here goes!' said he; and he turned up the narrow street on his right to 'wet his whistle' before committing himself to the search for adventure in the west. He turned into the bar of the first public-house and asked for a half-pint of 'old and bitter'—the Guardsman's favourite drink.

'Old and bitter, sir?' said the smart barmaid, looking not unkindly on his stalwart figure and handsome good-natured face as she drew the liquor. She seemed not disinclined to conversation; but she was anticipated by a well-dressed, black-muzzled man, with his tall hat tilted back, who sat on a stool, smoked a cigar, and drank spirits-and-water. 'Have a cigar, mister?' asked the man, displaying an open cigar-case.

'Thanks—no,' said Ferrers. 'I prefer a pipe;' and he produced and filled it. He had that instinct of English reserve which repels the familiar advance of a stranger.

'Excuse me,' said the man; 'but you've been a soldier—haven't you? I've been a soldier myself.'

'In the Horse Marines, wasn't it?' said Ferrers with a laugh.

'No, sir; in the American army.'

'I thought,' said Ferrers, 'you didn't look like a soldier. May I ask you a question?'

'You may, sir.'

'Aren't you an Irishman?'

'I am; and proud of the fact, sir, of belonging to that down-trodden nation. Why do you ask?'

'Oh, just because I thought only a down-trodden Irishman would go and serve under a foreign flag and then brag about it to an English soldier.'

'I served in America, sir, not as a private, but as an officer. In your blessed English army, would I have had a chance of being an officer?'

'I hope not,' said Ferrers with a laugh.

'No,' continued the Irishman, pulling his hat on and getting warmer. 'I'd have had a lot of insolent bloated aristocrats over me.'

'Perhaps,' said Ferrers, 'you know more aristocrats than I do. But I've known some, and I'd prefer them to the only officer of the American army I ever met. My captain was a Viscount, and my major was a Duke, and they were the best fellows I ever knew. Of course they lost their temper sometimes, and sometimes swore a bit; but every man that is a man does that. But I've fought shoulder to shoulder with them in square in the Soudan; we've drunk the same dirty water from the same confounded water-bottle; and we've sung the same songs riding through the desert. And if I were on my last legs, I'd ask them to help me before I'd ask anybody else; and they'd do it too.—What do you think of that?'

'What do I think of that, sir?' said the Irishman, rising from his stool, swallowing the last drops of his liquor, and moving to the door. 'I think that very likely you blacked their boots.' Saying that, he was gone, and Ferrers' toe was too late to help him out.

'You had him there,' laughed the barmaid; 'and he's bolted.'

'He has,' said Ferrers. 'But I may meet him another day.'

He finished his drink and departed, thinking over what he had said. His defence of his officers was quite unpremeditated. They had not been in his thought, and it had not occurred to him to appeal to them to find a way for him out of his present dead-lock. But now that the suggestion had arisen quite of itself, as one might say, he asked himself, 'Why not?'

So he marched on westward, till he found clubs to right of him, clubs to left of him, each one volleying forth from open windows above and below the liquorish and appetising odours of good cookery. Lord Debreth, he knew, was to be heard of at the Junior Carlton; and he walked slowly past its ample and imposing doorway. But a glance at the hall porter, who was taking the air on the top step, and who looked as important as a Secretary of State, and far more alarming than his late captain, and a glimpse of the gorgeous marble interior, so daunted him that he lost heart.

He passed on and up St James's Street, and so into Piccadilly, and on again westward. He was offered sundry adventures of a doubtful kind, but he marched steadily on. The roadway was thronged with omnibuses, and red-eyed hansoms and carriages bearing people from home and dinner to theatre, opera, or party; and the pavements were peopled with well-dressed persons of both sexes; but nowhere did he perceive a hint of the frail old gentleman or the lonely dowager who, he had hoped, were longing to adopt him.

When he was near his old barracks of Knightsbridge, he thought he was about as far west as civilisation and opportunity could extend, and as Fate could expect him to go. However, he consulted chance again, as he had done before. He set his cane upright on the pavement and let it fall. It fell without an instant's hesitation to the east.

'Very well,' said he to himself. 'Back I go.' So he returned the way he had come, his hope of adventure sinking lower and lower the nearer he approached to Trafalgar Square. At last he was back in his former place, leaning over the parapet. It was now quite dark, as dark, that is, as it ever is on a hot, clear-skied summer night. The space below him around the fountains was inhabited by dark figures, moving, as it seemed, aimlessly about; while the benches were almost completely filled—with the unemployed,' he thought.

'I'm one of the unemployed,' he said to himself. 'I'll have a seat.' He descended the steps, made room for himself on a bench and lighted his pipe. He sat thus for a little while musing. He saw in imagination his old home in the Cumberland hills under the summer night—the rich fields sloping down from the dear, ivy-clad house, and the sheltering wood behind. In fancy he heard the bark of the watchdog—bark answering unto bark all down and round the dale—and the low of the kine returned to pasture from the evening milking; he smelt, too, the sweet cool odour of the new-mown hay, the rich evanescent scent of the roses in the farm-garden, and of the honeysuckle in the hedges round; and a lump rose in his throat, and he wondered whether, after all, he had not better return, like the prodigal, to his father and take what place could be found for him. Suddenly he became aware of

loud and angry voices not far off; and looking up, he saw near one of the fountain-basins a dark knot of people which was drawing to itself more and more dark units from all sides. He rose and went over. As he approached, a shrill female voice rose in the air—'Police!' and continued in a key but little below the shrillest: 'I'll see if you'll molest a woman going quietly about her business—you bad man! you black, nefarious creature—you!'

Elbowing his way into the centre of the crowd, he saw that the 'bad man' on whom the woman's rage was centred was the black-muzzled Irishman. He was declaring to the amused or indifferent bystanders that the woman had done this and that, and had said this and that, to him.

'Why don't you let the woman alone?' demanded Ferrers. 'Is it Irish or American manners to make a row with a woman in a public place?'

'Mind your own business,' said the furious Irishman, 'you infernal English lamp-post!'

Ferrers said not a word; but stepping up to him, gripped him by the waist, raised him and shook him as a mastiff might shake a yapping cur, and dropped him into the water of the fountain-basin. The crowd, which had held its breath a moment, now roared with laughter: the ducking was a joke it could appreciate.

#### CHAPTER II.—COMRADES.

'By Jove!' Ferrers heard a voice exclaim behind him, 'I've known only one man that could lift another man like that!'

He thought he knew the voice. He turned, and saw a gentleman in evening dress about as tall as himself pushing towards him. It was Lord Debrett, who came and looked him in the face and grasped his hand.

'What? By Jove! it is you really, Ferrers. What are you doing here? Come along. The police are sure to turn up now when it's all over, and they may want to collar you.'

The Irish-American had scrambled out of his unexpected bath, and dripping with wet and fury he cried: 'I'll remember you for this! I'll spot you!'

'You'd better scuttle home,' said Lord Debrett, 'and change your clothes, or you'll catch cold.' And having thus said, he took Ferrers' arm and led him outside the crowd, where he was joined by another gentleman in evening dress. 'I was right,' said Lord Debrett.—'Let me introduce to you, Sir William, my old comrade, Ferrers of the Blues—Sergeant Ferrers that was.'

Sir William bowed somewhat stiffly; and Ferrers, being taken thus at unawares, returned the bow rather awkwardly. He felt he did not like Sir William, for no other reason, perhaps, than that he had made him to appear awkward. Sir William was middle-aged, thin-whiskered, lean, and of the middle height.

'Come and let us have a talk,' said Lord Debrett.

Ferrers said nothing; the presence of Sir William kept him from being quite easy and frank with his late captain.

'Were you going anywhere in particular?' asked Lord Debrett.

'No, my lord,' said Ferrers; 'I was just hanging about.'

'Well, Sir William and I were just walking down to the Gaiety for an hour; we have to go somewhere else afterwards.—Suppose, Dawlish, you go on to the theatre and come back and find me in the smoking-room of the Club?'

'That will suit me very well,' said Sir William.

'And me too,' thought Ferrers; and he bowed adieu to Sir William Dawlish with the greatest good-will, supposing he saw the last of him. But he had not done that by any means; and thereby hangs our tale.

The comrades-in-arms walked off together along Pall Mall.

'Who was the man you ducked, Ferrers?' asked Lord Debrett.

'I don't know, my lord,' answered Ferrers. 'I met him first an hour or more ago, when he was calling English officers names; and I came across him again now rowing with a woman, so I settled both counts by sousing him.'

Lord Debrett laughed. 'But look here, Ferrers. Don't call me "my lord" or "captain" when we meet like this, any more than I call you "sergeant." We've been comrades; and if it hadn't been for you, my bones would be bleaching with the rest at Abu Klea; so just call me Debrett, as I call you Ferrers.'

'Very well,' said Ferrers, feeling not unnaturally somewhat lifted up.

'Now, tell me what you've been doing since I saw you a year ago. I thought you had made up your mind to stay in the country with your father.'

'So I had.'

'And why didn't you go?' asked Debrett.

'I did go. And I stayed with him all through the winter and spring. But I got tired of the country; I wanted to be back in London; and so I came away about six weeks ago before all my money was spent.'

'And how have you been getting on since?'

'Well, times are not too lively.'

'But you've got something to do, I suppose?'

'No; nothing.'

'Nothing! That's bad. You've tried, I suppose?'

'Tried! I should think so!'

'But you're clever. You can write well and tot up accounts.'

'There are lots can do that better than me. I haven't tried for that.'

'What have you tried for?'

'I've tried for drawing'—

'I know you can draw and paint first class.'

'Well, I've offered myself as a War Artist, and shown some of my things. They liked them; but there ain't a war on, nor expected—worse luck!—So they just took my name in case anything should turn up; though they seemed to think I was too big, too noticeable, and would take too much to keep.'

'Little nippers of men, I suppose,' said Debrett, 'would do better for that.'

'I've offered myself,' continued Ferrers, warming to his narrative, 'to teach the use of the sabre in a fencing-gallery; but it appears nobody wants to learn cavalry practice, and rapier practice I don't know.'



'Humph!' grunted Debrett meditatively.

'I've offered myself as a riding-master; but they wondered if they had any horse strong enough to carry me. And I've answered advertisements for lots of other things, but without getting any reply. The fact is I seem to be too big for anything, except a door ornament with buttons for a swell shop or restaurant.'

'The doose you are!' exclaimed Lord Debrett, meditatively twisting his moustache. 'I daresay now if I broke loose and spent till I could get no more to spend, and if I had to take up some occupation, they'd think me too big, by Jove!'

'Oh,' said Ferrers, 'you're a lord. For that, the bigger the better.'

'Is that it? So being called a lord has its advantages.'

'I should think so—rather,' said Ferrers with a laugh.

'But go on,' said Debrett. 'Tell me about yourself. You mean to go on trying to get something, I suppose?'

'I mean to go on trying; though, to tell the truth, I don't know what to try for next.'

'Do you think I can do anything for you? If you find yourself short, you know, Ferrers'—

'Oh, I'm all right,' said Ferrers quickly.

Debrett was suspicious. 'Come now, Ferrers,' said he; 'on your oath—how much money have you got?'

'Well, Debrett, to tell you the truth, I've only got one-and-fivepence left.'

'Good heavens! One-and-fivepence! And,' he declared with a touch of contrition in his voice, 'I'm smoking. I believe, a one-and-sixpenny Partaga!—But you haven't been on starvation rations, surely! Now I look close at you, you're rather thin and pale.'

'Well, for a fortnight or so I've just managed to throw dust in the eyes of my appetite, so to speak. But it takes an enormous deal to choke off this appetite of mine.'

'Come along; come and have something,' said Lord Debrett, hurrying him into the Junior Carlton, through the great swinging doors, up the broad steps, and into the depths beyond.

Ferrers cast a glance in passing at the watchful Secretary of State in the porter's box, and wondered that an hour before he should have been so afraid of him. He was led into a private dining-room and set down at a table. He was asked what he would like, and with little hesitation he declared for cold beef, bread, and bitter ale. He asked Debrett if he was not going to eat also. Debrett said he could not, having little more than finished dinner.

'But,' said he, 'I'll keep you company with a drink.'

Then he refused to say another word till his friend had eaten his meal. He sat in an easy-chair, pulled his moustache, and ruminated. Presently, when Ferrers' efforts had slackened a little, he turned to him as if he had come to a weighty conclusion. 'Do you know, Ferrers,' said he, 'I think you've not come enough the old soldier, as you used to say; you've been too straightforward and frank with those civilians.'

'What do you mean, Debrett?' asked Ferrers.

'Well, you haven't bounced. You've just led them to think you were a poor devil of a simple

soldier, strong, deserving, and willing. That was a mistake.'

'How do you mean?'

'Don't you see? There was a want of generalship about it. You remember how Drury Lowe took Cairo? With a bit of bounce!'

'Yes, by Jingo!' said Ferrers with enthusiasm. 'Pluck first and bounce afterwards.'

'Well, there you are,' said Debrett. 'You've got pluck, but no bounce. Now look here. Though you're not a gentleman, Ferrers—you know what I mean, that you haven't birth, or estates, or that sort of thing—you'd very well pass for a gentleman with most people: you look like a gentleman, and you have the manners of a gentleman.'

'I've lived with your lordship so long,' said Ferrers.

'Don't say that again, Ferrers. It's only when you open your mouth and say something of that sort that you show, to anybody that knows, that you're not the proper thing. Don't say much to these civilians, and whatever you do don't be humble. Go about well dressed—you know how—call yourself captain or colonel; keep a stiff back, and, if you think it will work, be quietly insolent: those civilian beggars, I believe, will like you all the better for it.'

'I believe you're right,' said Ferrers, with his brows puckered in attention.

'Of course I'm right. I've seen it many a time. Now you take my tip and you'll get on.'

Lord Debrett uttered himself solemnly, as if what he said was the result of the garnered observation of a lifetime; and very likely it was.

'I believe you're right,' repeated Ferrers. 'Why, I've seen jokers myself, since I've been about now, come that game. They've stepped in and looked round as if all the place belonged to 'em, and they've ordered a cup of coffee and a slice as if they could buy up all the stores if they liked, and they've got served better and quicker than anybody else.'

'That's rough sort of practice, though,' said Debrett, sagely shaking his head. 'That's overdoing it. Don't overdo it, Ferrers.'

'I quite understand,' said Ferrers; 'oh yes. There's a way of doing it, of course.'

'Well, you take the right way and you'll get on.'

The simple comrades then adjourned to the smoking-room, where presently Sir William Dawlish entered and found them. Ferrers was not embarrassed, as he had been before, by Sir William's presence; for one thing, the baronet appeared less reserved and more friendly; and, for another, Ferrers was lustily primed with food and drink, and emboldened with the advice given him by Lord Debrett.

'Dawlish,' said Debrett, leaning well back in his lounge-chair and stretching his long legs—all three being provided with the accompaniments of a smoking-room lounge—'my friend Ferrers wants something to do: he's doosid hard-up. Can you recommend him anything?'

'Well,' said Sir William, with a smile that seemed to Ferrers more like a grin: it showed all his teeth—'well,' said he, 'if Mr Ferrers will excuse my saying it—he had the look when I first saw him of a hard-up man. I've had a large

experience,' continued he with another grin, 'of hard-up people: I'm commonly one of them myself.'

'But can you recommend him to anything?' asked Lord Debreth. 'He's a good fellow; he can always hold his tongue and keep his head.'

'An excellent character to have,' said Sir William, nodding and grinning; 'and I have no doubt he deserves it.'

'He is too confoundedly civil,' thought Ferrers. 'What does he mean by it?'

'Of course he does,' said Lord Debreth. 'I wasn't paying a compliment; I was merely recommending a good man.'

'But what,' asked Sir William, 'is Mr Ferrers' line?'

'I am a yeoman's son,' said Ferrers, speaking for himself, with a frank touch of pride, 'and I know something of farming; and I've served my twelve years in the Blues, from private to sergeant'—

'And he knows all that can be learned in the Guards,' broke in Debreth, 'and a good deal more besides.'

'And how's the education, may I ask?' said Sir William.

'Oh, that's all right,' said Debreth again before Ferrers could reply; 'besides drawing, callisthenics, and the use of the globes, and all that sort of thing.—But have you something in your eye, Dawlish, that might occupy any of Ferrers' talents?'

'I have a notion of something that would need a good many talents—one in particular.'

'Ah, now,' said Debreth, 'there's something at last;' while Ferrers feared it might be something he had already tried.

Sir William looked at him with a smile, and said: 'Mr Ferrers, I suppose, is an old enough soldier to carry out instructions without demanding an explanation?'

'I should think so,' answered Debreth.—'Eh, Ferrers?'

'Certainly I am,' said Ferrers.

'But what's on, Dawlish?' asked Debreth. 'Not a burglary or an abduction, eh?'

'You're not so good a soldier as Mr Ferrers,' said Sir William, grinning again: 'you want an explanation.'

'But I'm not going to take service,' answered the other.

'Well,' said Sir William, when he had considered a moment, 'it's neither a burglary nor an abduction; it's neither more nor less than a game I want to play with some wealthy and hard-fisted connections of mine in the City.—I had a brother,' he continued, leaning forward, to Lord Debreth, while his eye constantly turned to Ferrers, 'who made a pile of money as a banker. All his property was left in charge of his two partners—stupid, precise, old City men—and it's with them I have a little game on; and I have been thinking that Mr Ferrers might help me in it. I don't mind telling you in confidence that there is a lady concerned: a soldier is always ready to help a lady.'

'What do you say, Ferrers?' asked Debreth.

'Oh,' said Ferrers, 'I'm quite ready to have any game that's not against the law, with jokers of that sort.'

'I'll take care of the law,' said Sir William

with a grin. 'Now,' said he, considering his finger-nails a moment, 'for your help in this business I can afford to give you a hundred pounds and your expenses. You're not above taking money for a service rendered, I suppose, Mr Ferrers?'

'Unfortunately, I cannot afford to be,' said Ferrers.

'That's all right. Will my suggestion, then, suit you?'

'Perfectly,' said Ferrers. 'But I hope, Sir William, you won't think it too early if I ask you now what you want me to do.'

'It's quite necessary,' said Sir William politely, 'and by no means premature. I want you to call yourself "William Dawlish," and, to use what I believe is a vulgar phrase, to behave as such. That's all.'

'William Dawlish?' said Ferrers. 'I am supposed to be your son. Is that it?'

'We are not responsible for what people may suppose. But I perceive, Mr Ferrers, in your question a tendency to overdo it.'

'What I said,' remarked Debreth parenthetically, 'Don't overdo it, Ferrers.'

'No; don't,' said Sir William. 'It will be as well not to say you are my son, because you are not.'

'So far as you know, Dawlish,' suggested Lord Debreth.

'So far,' assented Sir William, 'as I know.'

'I begin to understand,' said Ferrers. 'I must play the game of "William Dawlish" with plain cards.'

'With plain cards as much as possible,' assented Sir William. 'If any one, for instance, should ask you point-blank, "Are you Sir William Dawlish's son?" you'll play low and say, "What has that to do with you?" or something of that sort. There are always people asking for information: your business is not to give it 'em. And always remember that whatever you do or say I've got to back you up in it—if it come to that; so I must rely on you not to compromise me.'

'Let me ask you, Sir William,' said Ferrers, 'this one thing more: there is nothing illegal, nothing wrong, no real damage to any one, I mean, in this game?'

'Nothing whatever,' said Sir William. 'You will have to act a fib for my sake, and especially for the sake of a certain lady. I have no precise instructions at present; only prepare to be William Dawlish.'

'I think, Sir William, I begin to see the thing,' said Ferrers. He was still perplexed; but he was afraid to appear stupid by asking questions.

'Now,' said Sir William, producing a cheque-book and a Livermore pen, 'I'll give you a cheque for fifty pounds on account of expenses.—You must dress properly, you know' (with a glance at Ferrer's rough tweed suit, which made him blush), 'and you must get a proper address and visiting-cards with "Mr William Dawlish" on them.'

'By Jove,' exclaimed Lord Debreth, 'this is going to be sport!'

'But remember,' said Sir William with warning pen, 'it is strictly between us three.'

'Oh, mum's the word,' said Lord Debreth.

'There will be no difficulty, I suppose,' said Sir

William to Ferrers, 'about leaving your present lodgings?'

'None at all,' said Ferrers.

'Well,' said Sir William, 'drive up to my rooms, No. — Jermyn Street, in a hansom at twelve o'clock to-morrow morning.'

'Oh, I shall come to breakfast, Dawlish!' exclaimed Lord Debrett.

'Do,' said Sir William.—'And,' continued he to Ferrers, 'have a good, big, stout portmanteau with you—not too new and not too light.—Now, Debrett,' said he with another of his grins, glancing at the mantel-clock, 'I think it's quite time we went.'

They rose.—'Ah, by the way,' said he, 'that cheque is drawn on my late brother's bank. It is possible they may detain you to make inquiries;' and he grinned again. 'But don't be disturbed: I'll make it all right.'

'In that case,' said Ferrers, 'had I not better have a—little loose cash, to make sure of keeping my morning appointment with you, Sir William?'

'That's well bethought,' said Sir William; and he took from his pocket-book a five-pound note and handed it to Ferrers.

Then they went out.

'What's the game, I wonder?' said Lord Debrett in Ferrers' ear as he bade him 'good-night.'

### OUR HOLY WELLS.

We are still in possession of the numerous Holy Wells esteemed by our forefathers for their curative properties, though most of us have long ceased to look at them from precisely the same point of view as that from which they regarded them. Nevertheless, we do not slight them altogether. St Winifred's Well, at Holywell, in Flintshire, is still a shrine in the eyes of antiquaries; and learned antiquarian societies visit it, and thoroughly appreciate its legends, surroundings, and architectural and archaeological features, as much as sanitarians value and admire the enormous yield of its spring. The forty stones marking the old penitential stations in the beautiful glen are still to be counted, and are even now, if we may believe report, occasionally kissed, it may be surreptitiously, in the hope that some of the old healing properties or influences may be secured by that ceremony. Annually, hundreds of tourists scan the superb chapel built by the mother of Henry VII. over the well, and the clever arrangement of the crutches left in it by those who were healed in old times, by means of which a decorative effect, as of rich open timber-work, is given to the roof. There are perhaps a score of holy wells of almost equal renown, locally, in North Wales, many of which have or had small ornamental chapels built over them. Dr Johnson mentions a chapel over a well near St Asaph's that he was taken to see when on a visit to the Thrales, that is not now in existence, probably on account of the spring being used to turn a neighbouring mill; and similar removals may have been made of others that had fallen into decay; and we have word, moreover, of the intentional destruction of another for the purpose of disillusion; but not-

withstanding these disappearances, the examples left us are still numerous.

There is an atmosphere of peace and architectural propriety about St Winifred's Well. William the Conqueror, Henry II., Edward I., and James II. are said to have devoutly repaired to it; and both before and after their days countless devotees resorted to it. But not many miles away there is another well of a very different character. This is the Cursing Well of St Eliau, in the parish of Llanelian, about two miles from Colwyn Bay. By placing upon a pebble the initials of any person to whom evil fortune is desired, and then dropping the stone into the well, a terrible curse, such as a great calamity or sudden death, is ensured to the individual thus indicated. It was stated at an Antiquarian Congress held last year that not very long ago vindictive people from all parts of Wales went to Llanelian to put those they wished to curse into the well in this fashion, and that the general dread of the proceeding was great beyond belief. Moreover, it formed the occupation of a custodian to search for the pebbles bearing the initials of any person who wished to be relieved from the curse, or taken out of the well, as it was called, who also advised the persons so unfortunate as to be thus condemned as to the best means to take to circumvent the curse. Pennant, the antiquary, relates that he was threatened by a man whom he had offended with the curse of St Eliau, and with an intimation that he would journey to the well to put the curse into effect. The Goblin Well, near the Goblin Tower, Denbigh, if there is anything in a name, is not to be compared with the characteristics of St Winifred's Well, either. There is another well, too, of a somewhat different repute from the majority; this is the well of St George, at Cegidoc, near Abergelen, which was esteemed for the recovery it ensured to horses suffering from disease. They were sprinkled with the water and blessed in the name of the saint. Rich people offered a horse at this shrine to secure a blessing to all the rest that belonged to them. As a rule, however, a holy well was associated with the relief of human sickness of various kinds.

The water of St Tecla's Well was considered specially useful for the falling-sickness, which was known as St Tecla's disease. After washing in the well at sundown and making an offering, the patient walked round it three times, repeating a prayer each time. The offering was a hen if the patient was a woman, and a cock if of the masculine sex. In either case, the fowl was also carried round the well and then round the church. The invalids were required to remain in the church all night. A Bible served for a pillow; the space under the communion table for a bed; and a carpet or cloth for covering. At break of day, after offering sixpence and leaving the fowl in the church, they departed, content with the understanding that if the bird died they would be cured. In the case of the well of St Beuno, it was necessary, after ablution in its waters, for the invalid to pass the night upon the tomb of the saint in the church, which was covered with rushes to make it tolerably comfortable, and, for one poor paralytic person, with a feather-bed. Offerings were made to this

church on Trinity Sunday of such calves and lambs as happened to be born with a certain mark on the ear that was called St Beuno's mark. These were sold by the churchwardens; and the money they brought was put into a chest made of a solid piece of oak, with three strong locks to it, which proceeding gave rise to the saying: 'You may as well try to break up St Beuno's chest.'

The well of St Peris was described by Pen-nant, at the close of the last century, as being enclosed with a wall in his day. He relates that the sibyl of the place told the fortunes of those who visited it by the appearance or non-appearance of a little fish which lurked in some of its holes. St Trillo's Well, on the verge of the seashore on the way towards the Little Ormes Head, from Colwyn Bay, has a chapel built over it of interesting antiquity. Another chapel over a well, known as Ffynnon Fair, is now in ruins; but there are registers extant belonging to it in which record is kept of various clandestine marriages that were performed at night in it. To the south of the Norman castle at Dysarth is an ivy-covered ruin of another sacred well, known as Siamber Wen; and within a mile or so of the same stronghold is the well admired by Dr Johnson, which now turns the mill-wheel. Close to Llanbaidr Church there is a well called Ffynnon St Dyfnog, that was once in great repute as 'virtuous waters,' and attracted large numbers of sick persons, whose offerings are in evidence in the Jesse window in the church. There is a well, too, near the church of Llan-Aelhaearn, the saint with an iron eyebrow, that was also much frequented on account of its sanctity. A chapel once covered St Helen's Well, near Carnarvon, also. At Aberdaron there is a fountain of fresh water, at the foot of a promontory, below high-water mark, that was frequented by devotees, who believed if they carried a mouthful of the water safely to the summit of the rocks, their desire would be granted.

In Cornwall there are several wells with chapels built over them; they are dedicated to St Austell, St Piran, St Cleer, St Levan, and St Agnes. The little oratory over St Austell's fount has a stone-groined roof and two doorways, and is about nine or ten feet long by a width of six feet. The chapel over St Levan's Well is smaller, or about nine feet square. A larger example at Horsebridge is about double these dimensions, and fifteen feet in height. There are several others in ruins, as at Bellarmins Tor and Vale. There is also a place called Holywell in this county, as in many others. There are different virtues ascribed to the various wells, one of which confers mastership upon the one of a newly-wedded pair that is the first to taste of its waters after the marriage ceremony.

Well-chapels are not so numerous in other parts of the kingdom. The health-giving springs are more frequently left to find their way to the nearest stream without any attempt to enclose them. At Holystone, in Northumberland, near the Cheviots, there is a well or spring which is identified as the waters in which Paulinus baptised the Northumbrians in the days of the Heptarchy. It presents the aspect of an oblong pool about forty feet long and twenty-four feet wide. It

stands in a plantation of firs and larches; and in the centre of the quadrangular basin is a tall stone cross inscribed with a notification that Paulinus the Bishop baptised three thousand Northumbrians there at Easter DCXXVII. The spot is kept in neat order, and seats are placed for visitors to rest.

In the same county there is a well of much interest near Flodden Field, the same fountain-cell, built by Sybil Grey, to which Sir Walter Scott made Marmion indebted for his last draught after his mortal wound. It is on a hill-side, and now has some lines from the poem cut into its new and handsome granite front. Those who climb to drink of the waters of this well can see the battle-field and note the different directions occupied by the troops, the mound, or Piper's Hill, where the body of the king was found with so many of the dead 'flowers of the Forest,' and the churchyard, in which heaps of the slain were afterwards buried, for the ground falls away from it, and all is spread out before them unintercepted.

The Freemen's Well, on Alnwick Moor, in the same county, though not recognised as a sacred fount, is too remarkable to be passed over. King John, in riding over the moor six centuries ago, fell into a quagmire at this spot; and was so enraged with the burgesses in consequence, that he took their charter from them; and was only induced to return it on condition that every freeman should also wade through it on acquiring the privileges it conferred. Ever since that distant day, and on the anniversary of it, till quite recently, the young men of the town who wished to take up their freedom, as it was called, went through this well, with various formalities, before they were enrolled. As it is about four miles from the town, and riding the boundaries of the three thousand acres of moorland was part of the same ceremony, the candidates were required to ride, and were accompanied by the authorities of the town and of the castle, as well as by a numerous cavalcade of friends, anxious to see how they comported themselves under circumstances that were carefully made as trying as possible. After preliminary formalities with drawn swords in the market-place, the young men rode up the steep street leading to the moor, and began their journey over rocks, ditches, dykes, whins, heather, and other difficulties; and many of them were thrown by the way. They were required by the moor-grievances to stop at every cairn, marking the boundaries, and place a stone upon it. When they came to the well, which is a pool about a hundred yards long and a dozen yards wide, and from three to five feet deep, they dismounted, donned garments gaily decorated, but suitable for immersion, and flung themselves into the water, and each contended with the rest to get to the opposite side first. Ropes of straw hidden in the water, and holes dug here and there, made them stumble and flounder; but in the end they managed to get through. Their friends assisted them to resume their dry clothing; and, remounting, they continued the ride round the moor. On returning to the town, they were hospitably regaled with strong ale at the castle, which they passed on the way back to the market-place, whilst the waits played *Chevy Chase*. A crown bowl of punch in the market-place finished



the proceedings of the day, which were resumed on the following afternoon, that the town might be perambulated and further rejoicings take place.

As in Cornwall, there are places called Holy-well in this county. One is near North Shields, and derives its name from St Mary's Well, the waters of which have the property of turning colour when galls are added to it. Another holy well, at Jesmond, Newcastle-on-Tyne, once very esteemed, was provided with thirty-nine steps.

There were several holy wells in old times in London. One was St Chad's Well, near Battle-bridge, which maintained its reputation into this century. It was surrounded in 1824 by a garden with alleys of clipped hedges, on the gates of which was a board with a notification, 'Health restored and preserved.' There was another near the church of St Pancras. But the most famous was Bride Well, which gave its name to the neighbouring hospital and prison. On the coronation of George IV., Hone tells us, so many thousands of bottles were filled with the water from it that the inhabitants of the parish could not get their usual supply. The suburbs could also boast of many famous wells. Sadler's Wells was more a place of fashionable resort; but Kilburn Wells and Streatham Wells were esteemed for their 'virtuous waters,' like the simple fountains in the Welsh hills that have been mentioned.

Probably there were once ornamental crosses associated with most holy wells. There is an interesting survival of this combination at Geddington, where the Eleanor Cross stands close to a spring, which is indeed at the base of the steps upon which it is placed. The well is covered with a stone erection of two arches, and a few stone steps descend from the level of the road to give access to it. Three statues of the good brave queen look down from their high place, under their cusped canopies, upon the drawers of water who for so many centuries have availed themselves of this spring. It is situated in an open space among the mellow old houses in the village, at a short distance from the church. From an account preserved of the proceedings that took place at Dunstable and St Albans on the occasion of the removal of the dead queen, we may assume that her remains rested on the very spot marked by the cross. Says the chronicler: 'The body of the queen rested in the market-place until the king's Chancellor, and the great men then and there present, had marked a fitting place where they might afterwards erect, at the royal expense, a cross of wonderful size; our prior being then present, and sprinkling holy water.' In the case of Geddington, the existence of the spring may have led to the spot being marked as a fitting place.

From the days when Abraham's servants digged wells, and Isaac digged again the wells of water, it is clear those who have lived before us have set the highest value upon them. The numerous spas—or spaws, as they were written when Sir Walter Scott wrote *St Roman's Well*—are on a more imposing scale than the little wells here mentioned, but scarcely more appreciated. The water-cure advocated in our own time seems but another phase of the same feeling that took

William the Conqueror to St Winifred's Well, or set Robert of Gloucester writing of 'welles swete and colde.' And though we look at them with new lights, and sanitary science bids us analyse water and examine its surroundings with close scrutiny, and otherwise treat it with suspicion, before we accept it unreservedly as fit for consumption, we must all feel Nature has bestowed few greater boons on mankind than springs of pure water, or, to use the old term which some of them so long enjoyed, our Holy Wells.

## DUMARESQ'S DAUGHTER.

By GRANT ALLEN, AUTHOR OF 'IN ALL SHADERS,'  
'THIS MORTAL COIL,' ETC.

### CHAPTER XLIII.—THE FAITH CURE.

FOR a minute or two, they crowded in silent awe and suspense round poor fainting Psyche, whom excess of joy, too sudden joy, had affected so profoundly as no shock of grief could ever have affected that resolute nature. Then Haviland Dumaresq, half seizing her in his arms, led her gently aside; and the *chef de gare*, perceiving her weak and shattered condition, brought out a chair and placed it for her by the wall with something more than mere conventional French politeness. 'Mademoiselle is moved?' he asked good-humouredly. 'Mademoiselle recovers a long-lost friend? A brother, perhaps? A parent? An acquaintance? May I venture to recommend for Mademoiselle some *eau de fleurs d'oranger* in a little water? That calms the nerves. That restores the circulation.'

He brought her that universal panacea of his race in a full tumbler; and Dumaresq, trembling, held it to Psyche's lips. But Psyche waved the sickly decoction away with her hand rapidly, and sat still, fanning herself in a whirl of joy. Her whole soul was divided within her by conflicting emotions. She hardly knew as yet whether she could survive the shock, the terrible shock of finding her painter alive again and restored to her so unexpectedly.

One thing only she did *not* feel—the faintest shame of maidenly shrinking at the way she had flung herself without one thought of reserve into Linnell's arms as he stepped out on the platform. She couldn't tell how, but no doubt or fear remained any longer: she *knew* now, knew to an absolute certainty, that she loved Linnell, and that Linnell loved her. After all they had both done and suffered, the idea of greeting him in any other fashion than that never even occurred to her. Nor, to say the truth, did it occur to Linnell either. For both, in the delight of that unexpected meeting, the past was blotted out at one single blow, and they stood face to face at last rejoicing, too full of joy to admit the intervention of any other smaller or less worthy feeling.

That practical Corona was the first to make a decisive move. 'Say, Cyrus,' she exclaimed, turning round abruptly, 'you've got the checks. I gave 'em to you at Constantine. Just you run and look after my baggage, will you?'

Thus admonished as to the common concerns of our everyday existence, poor crest-fallen Cyrus, feeling himself somewhat awkwardly at a dis-

count in this pretty little domestic drama of European life, went off as he was bid to recover the luggage. In a few minutes more, he returned in triumph to the spot where the little group still sat or stood immovable, and recommended a retreat to the cabs outside with all expedition. For, to say the truth, they were beginning to attract some whispering attention.

'Can you move, dear?' Sirena asked, bending gently over Psyche with sisterly interest: 'or would you like us to ask some of the *dépôt* folk to lift the chair and carry you out to the carriage?'

Psyche rose, abashed at last, from the chair where she sat. 'I can walk,' she answered, now blushing violently, and just conscious for the first time since Linnell's arrival of that alternative aspect of the unexpected episode. 'But where is HE going to stop this evening?'

'Sir Austen?' Corona asked. 'Oh, we've fixed up all that as we came along in the cars. He's going along up with the rest of us to the Orangers.'

'If I may, Psyche,' Linnell added wistfully.

Psyche made no answer, but looked at him through her tears. Then taking her father's hand tremulously in hers, she walked over with the rest to the door of the station. The Arabs and the porters were already engaged in the usual pitched battle outside for the possession of the boxes. Psyche stood by and looked on while the two conflicting powers mounted the luggage on the front with many loud cries and shouts of *Ar-r-ri*.

'We shall want two cabs,' Corona whispered in her brother's ear. 'Let Sir Austen and the Dumaresqs go up alone together.'

Cyrus turned round and gazed with a sudden start into Psyche's face. Psyche blushed: her eyes met his all unawares for a second, and then dropped timidly. Cyrus had not presence of mind to conceal his surprise. 'Why, she sees,' he exclaimed in a tone of the profoundest and most naïf astonishment. 'Have her eyes got all right again while we were away, then, Sirena? She sees to-night just as well as anybody! She walked like an arrow straight out of the *dépôt*!'

Psyche herself started in return, almost equally astonished at this new discovery. In the tumult of mingled emotion and internal feeling at that supreme crisis of her life she actually forgot for the first minute or two she had recovered her sight: or, to speak more correctly, she never so much as remembered at all she had lost it. The moment she heard Linnell's voice in the carriage, her senses were quickened to the utmost pitch of effort and efficiency. She knew it was Linnell: she was sure it was Linnell; and at that sudden revulsion, breaking forward in a wild rush of joy, she looked, without ever even thinking of it, in the direction whence that familiar voice proceeded. In a second, the disused nervous tracts resumed as if by magic their forgotten function. Science was right: it was mere obsolescence. She saw her lover, her dead lover, in that second of joy, as distinctly as she had ever beheld anything on earth in her whole life before.

Yes, Haviland Dumaresq was justified after all. Happiness is the best of all possible tonics. As

they rode up together through the crowded streets, Linnell sitting opposite her in the light *fiacre*, and all the world at once recovered, Psyche still forgot she had ever been blinded. Her father watched her with anxious care. Was it only a false flicker, he wondered to himself, or would her sight come back again as clear and strong and distinct as ever?

Day after day he watched her carefully. Would a relapse come? But he had no need now to watch any longer. The cause was gone, and the effect disappeared as if by magic along with it. For a while, indeed, Psyche's eyes were a little less serviceable and trustworthy than of old: occasional short fits of dimness supervened: the long disuse and waste required to be repaired by gradual rebuilding. But joy works wonders unknown to medicine. With each fresh day spent at the Orangers under these new conditions, Psyche's health recovered itself at once with the marvellous rapidity of early youth. Algiers was glorified for her into an earthly paradise. Those beautiful walks on the breezy hills, those valley strolls among the asphodels and the orchids and the Spanish broom, with Linnell by her side to take her little hand as she clambered among the rocks, and to whisper soft words into her tingling ear, brought unwonted roses back to that cheek, so pale and white in the beginning of the winter. The joy that might have killed her restored her to life. She revelled in the light, the warmth, the sunshine.

For her own part, Psyche had never the courage to hear from Linnell's own lips the true story of that terrible ride for life across the burning desert, and the catastrophe which had wrought them both so much untold misery. But Haviland Dumaresq and Cyrus Vanrenen heard it all the very next day, in the garden at the Orangers, while Psyche sat happy in the tennis-ground below, with Sirena's hand twined in hers gratefully. They heard how Linnell, in his last extremity, escaping from the camp with his cousin Sir Austen, had been intercepted on the open by a strong body of robber Touaregs, not far from Hassion, the very spot where a few years earlier Colonel Flatters and his French expedition had all been massacred in cold blood. Sir Austen, whose camel was less fleet than Linnell's, seeing the outlaws approach, had urged his cousin to fly at all speed and leave him to his fate; but the painter, incapable of deserting his tried companion after so many dangers faced and escaped together, had turned to his aid, and in his fluent Arabic endeavoured to parley with their savage assailants. The Touaregs, however, cared but little for either Christian or Moslem. They fired upon Sir Austen, who fell from his seat; and they left him dead in the night on the open sand. Then hacking down Linnell himself with their short swords, they went off with the camels, so that the artist found himself alone in the desert, without food or money, to die of hunger and loss of blood, or be devoured, half dead, by the clanging vultures.

Haviland Dumaresq shuddered as he heard the tale. 'Never tell Psyche,' he cried with his hands clasped tight. 'She's suffered enough and more than enough already. To know how you,

too, suffered would wring her poor heart.—But what did you do then? How did you finally get across to Ouargla?

'I was left on the sands alone,' Linnell answered briefly, 'with my cousin's body lying dead before me. A horrible terror seized me lest the caravan we had just left should come up and overtake us, in which case our sheikh would of course have finished killing what little was left of me. I was faint from my wounds and loss of blood. But there was only myself to do all that need be done. With my own hands, there in the open plain, I scooped a hole in the hot, hot sand, and covered his body over with it decently. After that, I set out all alone to walk northward. The loss of blood had left me very faint: so, crawling and straggling, I hardly know how, failing at times, and dying of thirst, but enduring still—because I wanted to get back at last, for Payche's sake—I made my way towards Algeria. After two days' floundering alone through the bare sand, dazed and stunned, and half dead with fever, I lay down to die. Just then, a caravan belonging to the Khalifa of Ouargla, who is a French dependent, came by within sight. I signalled with my handkerchief. They picked me up. I promised them money if they took me with them; and they brought me on to their own oasis, where the White Fathers, as you know, generously took charge of me and tended me carefully.—But don't ask me any more at present. I can't bear to talk of it: I can't bear to think of it. The picture of that poor fellow, lying bleeding and dead in the midst of the desert, with the lonely silent sand spreading wide all around, and the blazing sun hanging all day long in the hot gray sky overhead, haunts me still, and will haunt me for ever, till the day I die, with its horrible presence.'

When he finished his story, Cyrus drew a deep sigh of regret. He was glad Miss Dumaresq should have her lover back again; but he did wish events at Cincinnati had permitted him to stop and see her made into a real live baroness. For Cyrus's views on the intricacies of British nomenclature in the matter of titles were as vague as those generally current in the newspaper press of his benighted fatherland.

### COLOSSAL SAILING-SHIPS.

THE Victorian era will be especially remarkable for the sturdy strides that have been made in the principles of ship-construction consequent on an immeasurable increase of scientific knowledge enabling mankind to bring into subjection forces of Nature hitherto refractory. Sir Walter Raleigh well said that 'whoever was the first inventor of ships, every age has added somewhat to them.' Many and various are the fables connected with ships of antiquity, whose architects were ranked with the gods, and the ships themselves pictured among the constellations. Bluff-bowed East Indianmen of the good old days have utterly disappeared from active service. They were liberally manned, and barely distinguishable from wooden war-ships of the period. Such superior merchant-craft got under way in the most approved man-of-war fashion, setting and shortening sail in the twinkling of an eye to the shrill notes of a boatswain's call. Occasionally,

they usurped the white ensign appropriate to ships of the royal navy; and passing cargo-craft would lazily lower light sails in courteous recognition of the rights of that flag so celebrated in song and story. Officers of East Indianmen were wont to regard with disdain less fortunate navigators belonging to lowly cargo carriers. Passengers produced better returns to ship-owners than cargo, for as much as three hundred pounds has been paid for an unfurnished stern cabin for the passage from Calcutta to London.

Iron, steel, and steam have done much to drive wooden walls and snow-white sails from off the high seas. During the past quarter of a century important changes have taken place both in the form and in the size of British sailing-ships. These improvements are particularly noticeable when we remember that throughout the previous hundred years shipbuilders remained constant to their old traditions. China alone of all the maritime nations has been content to sit stolidly with folded hands and Oriental fatalism watching the flowing tide of commercial progress move majestically onward. Her carrying-craft of to-day differ but slightly from the ungainly model of ten centuries ago. Even the almond-eyed inhabitants of the Flowery Land, however, have hastened to become possessors of several war-ships of most modern type built by Europeans. It was positively predicted that the days of sailing-ships were numbered when by the masterful mind of De Lesseps the Suez Canal became an accomplished fact. Swift steamships of colossal proportions have availed themselves to the utmost of this short cut to India, China, and the antipodes; nevertheless, the white woven wings of sailing-ships are still to be seen on every sea.

Propulsion by steam and shortening of route have not led to so radical a revolution in our ocean carrying-trade as was fairly anticipated. Truly the hearts of those who go down to the sea in ships shall never again be gladdened by the impressive sight of so goodly a gathering of sailing-vessels as was witnessed at the entrance to the English Channel on the 10th of May 1870. No fewer than three hundred sail of homeward-bounders from every clime were in sight from the deck! This large number included some of the largest and the fleetest ships of that age of clippers, laden with the costliest of cargoes, and straining every rope-yarn to reach their destinations despite an annoying head-wind which sorely taxed the temper of officers and crews. Prevalence of easterly wind not infrequently prevented sailing-ships from making a rapid passage, even though all had gone well until the chalky cliffs of Dover were almost in sight, and supplies of food were sometimes sent to the belated ones. Upon representation made by Lloyd's to the Admiralty, ships of the State were sent on this errand of mercy. On the 15th of September 1890, no fewer than four hundred outward-bound sailing-ships got under way from Elsinore, where they had been detained at anchor by persistent contrary winds. About half-a-dozen of this large fleet of peaceful merchantmen were splendid specimens of our more modern iron clipper-craft on their way to Australia with timber. An overwhelming majority, however, were wooden vessels of small tonnage and inferior build.

Sailing-ships are comparatively fewer in number than formerly, but, on the other hand, they are much larger individually. The unqualified success of steam as a motive-power has almost determined the necessity for the employment of gigantic sailing-ships in order to compete with steamers. Sixty years ago there were only one hundred and fifty British sailing-merchantmen, each of more than five hundred tons register; but size has increased with the flight of time, and there are now in existence more than that number of sailers, each having a register capacity exceeding two thousand tons! In 1860 sailers of one thousand tons register were in demand; and each decade has brought an increase of five hundred tons. Thirty years since, not more than ten sailing-ships of above two thousand tons net register were afloat. They belonged principally to Liverpool, were wooden built, and the largest were the *Donald McKay*, of 2636 tons, and the *British Empire*, of 2679 tons. The former bore the name of her renowned builder; and the latter, originally designed for a steamship, had stranded soon after launching, and been converted into a sailing-ship, so that she never had her engines. There were also the *White Star*, the *Morning Light*, and the *James Baines*, of two thousand three hundred tons. About two dozen ships registered between fifteen hundred to two thousand tons, inclusive of some whose names are as familiar as household words in the families of pioneer settlers in our antipodean colonies. The *Marco Polo*, the *Champion of the Seas*, the *Ocean Monarch*, the *Red Jacket*, the *Tudor*, and the *Lightning*, are far-famed examples that have helped to make history. Both the *Lightning* and the *James Baines* belonged to the Black Ball Line of celebrated Australian packet-ships, which did for passenger traffic what the large steamship lines do now on a more extensive and satisfactory scale. On the 20th of November 1856 the former vessel arrived home from Melbourne with a part freight of gold, wrested from the hard bowels of the southern earth, which was worth five hundred and sixty thousand pounds. Two days later, the *James Baines* came in from the same place with seven hundred thousand pounds! Never again will a sailing-ship be entrusted with so valuable a cargo. British shipbuilders once found it necessary to seek models from yards of the United States; but the introduction of iron in shipbuilding and the abolition of disastrous tonnage laws over here have changed all that for the better.

Builders of merchant-ships are heavily handicapped, for they have to ensure to their customers such ships as shall afford a maximum freight-carrying capacity consistent with speed and safety. Old-time legal measurements were decidedly defective, inasmuch as they merely took into consideration the length and the breadth of a ship, so that a reprehensible tendency was fostered to make ships of insignificant width but of great depth of hold. Such box-built craft could carry much more cargo than far safer models; and since port charges were based upon register tonnage, it seems scarcely necessary to state that ugly ships were at a premium. Being very narrow, they were unable to stand up in a breeze of wind, but were slow and unsafe; whereas American clippers with plenty of beam could

derive advantage from every inch of their lofty spars and startling spread of canvas, which covered them aloft like a vast fleecy cloud. Freight between New York and California were then so high, that a shipowner has been known to clear the cost of a vessel by her first passage. From the Golden Gate these swift sailing-ships stretched across to China, and practically monopolised the tea-trade, until supplanted by British ships of half their size, which owed their origin to the repeal of the navigation laws in 1850, and the alteration in laws relating to tonnage four years later. From 1850 to 1860 as much as six or eight guineas per ton was paid for the carriage of tea from China to London; and even ten guineas was once reached. A prize of one pound sterling per ton was awarded to the first ship home with the new season's tea. Life was worth living to a master of a tea-clipper; but the work was not altogether wanting in danger to all concerned.

Now, not only does this country far surpass every other in its total number of carrying-craft and their aggregate tonnage, but also in the quality and capabilities of the ships themselves. America's mercantile marine is alone comparable with that of Great Britain, yet seventy per cent. of their ocean carrying-trade is done by ships of other nations, of which by far the greater part is under the British flag. Of one thousand and six ships which left New York for Europe carrying American grain during the twelve months of 1890, only five flew the stars and stripes. Not less than two-thirds of the total quantity of grain was carried by British ships. Again, three thousand three hundred and eighty-nine steamships passed through the Suez Canal in 1890, of which two thousand five hundred and twenty-two were British, but only three American. Nevertheless, America is awakening from her Rip van Winkle slumber, and patriotic politicians are briskly bestirring themselves to remove this reproach. She has now thirty sailing-ships between two thousand and two thousand five hundred tons register, and two of over three thousand tons. They are all wooden vessels, with one exception, the *Kenilworth*, an iron ship built on the Clyde. Protective restrictions do not admit of foreign-built vessels being placed under the American flag unless and until a sum of money be spent upon them which shall exceed the price paid for them on transfer to American owners. The *Kenilworth* was burnt in port, bought for a small fraction of her first cost, and almost rebuilt. America, however, has a few smaller ships built of iron in home yards. Quite recently President Harrison expressed a wish not only for more American war-ships to cheer his countrymen resident in far-off lands, but also 'that in those ports, so long unfamiliar with the American flag, there should again be found our steamships and sailing-vessels flying the flag we all love.'

The first iron ship has more reputed birthplaces than Homer. Both the Clyde and the Mersey claim pre-eminence in this respect. Sir E. J. Robison of Edinburgh designed an iron vessel in 1816 which was not launched till three years later; and it is said that an iron boat was worked on the Severn even as far back as 1787. Steel was not used in the construction of merchant-ships' hulls until 1869. Old salts were not alone in their belief that wood was meant by



Providence to float, but iron to go to the bottom. A naval constructor of some repute said: 'Don't talk to me of iron ships; they are contrary to nature.' Now none but small craft are built of wood in this country.

The Mercantile Marine List for 1891 shows that one hundred and thirty-three British sailing-ships each register between two thousand and two thousand five hundred tons, twenty between two thousand five hundred and three thousand tons, and one leviathan of three thousand three hundred and thirty tons!

Shipbuilders' yards were well distributed around our coasts when wooden ships were in vogue; but now that iron and steel ships have come to the front, there is a tendency to congestion. A trip down the Clyde affords an excellent object lesson on the concentration of iron shipbuilding yards. We have somewhere seen it stated that a greater number of new ships are launched from the shipyards along the banks of that river than from the whole of the yards on the Continent of Europe. And this, although the Clyde yards are not so favourably situated as those of the Tees, the Tyne, and the Wear, because those rivers flow through districts abounding in iron and coal. Scotch shipbuilders early evinced far-seeing enterprise, by readily undertaking the building of iron ships when their future was an unknown quantity. Nevertheless, it may be urged that other industries compensate the dwellers along the banks of those rivers. Of the one hundred and fifty-four huge sailing-ships referred to above, we find that sixty-two were built on the Clyde; twenty-six at Southampton; twenty at Liverpool; fourteen at Belfast; six at Whitehaven; five at Stockton; five at Nova Scotian ports; four at Workington; two each at Aberdeen, Dundee, Southwick, and Sunderland; one each at Leith, London, Nantes, and one at Boston, United States. There is, however, a somewhat different geographical disposition of the owners of these large ships. Eighty-one belong to Liverpool, forty-one to Clyde ports, thirteen to London, six to Belfast, five to Nova Scotian ports, four to Dundee, two to Aberdeen, one to Dublin, and one to Southampton.

The French five-master, *France*, is the largest sailing-ship afloat. She was launched in September 1890 from the yard of Messrs D. W. Henderson at Partick, for Messrs Bordes et Fils, and her dimensions are as follows: length 361 feet, breadth 49 feet, depth 26 feet. Her net register tonnage is 3624, with a sail-area of 49,000 square feet; and not long since she carried an enormous cargo of 5900 tons of coal on her maiden passage from Barry to Rio de Janeiro. Cunning old seadogs shook their heads, and looked as though they could a tale unfold; but the sinister forebodings were not justified by the result. It is always awkward to prophesy unless we know, for she reached her port without mishap after thirty-two days' sail, or within one day of the fastest passage on record. She is square-rigged on four masts, but carries fore-and-aft canvas on the fifth mast, which is far aft. Her masts are only one hundred and sixty feet high; nevertheless, she looks heavily sparred. This leviathan is fitted with a cellular double bottom, and can carry two thousand tons of water-ballast, thus reducing the expense of ballasting to a minimum.

Another large iron ship, the *Nord*, belonging to the same important Bordeaux firm, has safely carried 5000 tons of coal from the Tyne to Valparaiso. Her length is 318 feet, breadth 46 feet, and depth 29 feet. A sister-ship, the *Dunkerque*, was also built on the Clyde; and should the French Bounty Law be further prolonged, the firm proposes to have another five-masted sailing-ship built which shall be capable of carrying seven or eight thousand tons of cargo! An auxiliary engine fitted in the after-part of this colossal sailing-ship will provide against calms, and enable her to dispense with tugs when making port. In passing, we may mention that auxiliary engines have hitherto been more costly than useful.

The largest British ship is the *Liverpool*, of 3330 tons, built of iron by Messrs Russell & Co. on the Clyde. She is 333 feet long, 48 feet broad, and 28 feet deep. Her four masts are each square-rigged; but she is far from clumsy aloft, is easily handled, and has run fourteen knots an hour for a whole day. We were much impressed by her exceptional size; but for beauty she compares unfavourably with such a ship as the *Thermopylae*, or a large wooden-built ship of America having bright lofty spars, and decks as white as a hound's tooth. Iron decks do not lend themselves readily to adornment. Next in size is the *Palgrave*, of 3078 tons. The United States' ship, *Shenandoah*, of Bath, Maine, built by Messrs Sewall & Co. of that port, is the largest wooden vessel in existence. She is 3258 tons register, and will carry about 5000 tons of heavy cargo. She has just left San Francisco, California, with 112,000 cents of wheat, worth 175,000 dollars. This is the largest grain cargo on record. Another wooden vessel, the *Rappahannock*, also built at Bath, Maine, is 3053 tons register, cost 125,000 dollars; and 706 tons of Virginia oak, together with 1,200,000 feet of pine-timber, were used in her construction. The largest British wooden ship is the *Three Brothers*, of 2936 tons register, built at Boston, United States, in 1855. She is 323 feet long, 48 feet broad, and 31 feet deep. A further conception may be formed of the carrying capacity of such ships when we mention that the *Liverpool* brought 20,000 bales of jute from Calcutta to Dundee, and the *Rappahannock* took 125,000 cases of petroleum from Philadelphia to Japan.

Large ships were not unknown to the ancients, and some of the most roomy attained dimensions equal to ships of modern times. Nevertheless, they were unmanageable monstrosities, almost at the mercy of wind and wave, and utterly unfit to cope with the fury of a hurricane. Doubtless, we are indebted to travellers' tales for the detailed descriptions that survive the lapse of ages. Constantius conveyed from Heliopolis to Rome an obelisk weighing fifteen hundred tons; and in addition to this long-coveted monolith, the ship carried about twelve hundred tons of pulse, stowed about the smaller end of the obelisk, in order to bring the ship on an even keel. In 268 B.C. Archimedes devised a marvellous ship for Hiero of Syracuse. Her three lofty masts had been brought from Britain; whereas our ships' masts are of iron, or obtained from New Zealand or from Vancouver Island. Luxuriously fitted sleeping apartments abounded, and one of her

banqueting halls was paved with agate and costly Sicilian stone. Other floors were cunningly inlaid with scenes from the *Iliad*. Stables for many horses, ponds stocked with live fish, gardens watered by artificial rivulets, and hot baths, were provided for use or amusement. Ptolemy Philopater possessed a nuptial yacht, the *Thalamegon*, 312 feet long, and 45 feet deep. A graceful gallery, supported by curiously-carved columns, ran round the vessel, and within were temples of Venus and of Bacchus. Her masts were 100 feet high; her sails and cordage of royal purple hue.

Probably the largest vessel of remote ages was one belonging to the same ruler. She was 420 feet long, 56 feet broad, 72 feet from the top of her prow to her keel, and 80 feet from the highest part of her poop. Her largest oars were 56 feet in length; she had two prows, two sterns, and seven beaks or rostra. On both poop and prows were figures of men and of animals fully eighteen feet high. Her crew consisted of 4000 oarsmen, 3000 soldiers, and several hundred of other ranks. Sesostris is said to have had a ship 400 feet long, which was covered inside with silver and outside with gold. This story causes the adventures of Baron Munchausen to pale into insignificance.

### THE CHINCH BUG.

OUR American friends use the term 'bug,' as we know, in colloquial speech to denote any insect; but the subject of this paper is quite entitled to the name, inasmuch as it belongs to the same family as the highly disreputable insect which in this country is pre-eminently distinguished by it.

The Chinch Bug is a modern celebrity; it is only during the last ten or fifteen years that it has become generally known even in America; while in this country its name is still unfamiliar, and—for itself—we do not wish that it should become a common acquaintance. In the United States it is now well known. It has been the subject of numerous newspaper articles and Reports; and the Government has done it the honour of allowing the State Entomologist to devote special bulletins entirely to it. It was even the subject of a 'convention'—The Chinch Bug Convention—held in the city of Windsor (Kansas) in 1881. It is, in fact, what the authorities call a 'first-class insect;' but the high rank assigned to it, and the eagerness with which its movements are watched and reported upon, are due neither to beauty of form, colour, nor any personal attractiveness, but to the fact that it has proved itself specially destructive to the grain-crops. It is a first-class ill-doer; so at least thinks the American farmer, and, as we must allow, not without good reason, when we learn that its ravages in the course of a single season involve a loss measured by millions of dollars. No doubt the chinch bug has its uses, though these are not at present very apparent. Possibly one of them may be to stimulate the energies of the farmer, by taxing all his resources of intelligence in the effort to circumvent the enemy—as was suggested by Professor Riley for

the encouragement of the agriculturists of California, in relation to certain other insects which had proved very troublesome to the fruit-growers of that State.

The chinch bug is a very small, innocent-looking creature. When full grown it is little more than one-eighth of an inch in length. It has not even jaws wherewith to bite. How, then, can it do so much harm? The mouth is furnished with a tiny apparatus for piercing the stalks of grain in order to suck their juices. Now, the damage which one, or a hundred, or even a thousand, of these minute creatures could do would be quite insignificant; but when we get the combined destructiveness of myriads, the results may amount to a national calamity; and a country, rich, even as America, and endowed with the wonderful recuperative energy of youth, cannot afford to ignore an enemy which in a single year may cause the loss of produce which has been officially valued at one hundred million dollars.

The earliest record of the chinch bug dates back little more than a hundred years, to 1783, at the close of the War of Independence, when it was mistaken for another insect pest, the Hessian Fly, which about the same time began to attract attention. It was not, however, till the year 1831 that the first scientific description of the insect was given by Mr Say, the naturalist, 'from a single specimen collected on the shore of Virginia.' At various times since the first mention of it in 1783, it has appeared in great numbers in different localities in the States, though in earlier times the area of its operations was generally more limited. Its rapid increase in recent times is in part accounted for by the greatly extended cultivation of its favourite foods, wheat and Indian corn or maize. These it prefers; and on these it flourishes and multiplies. Next in its favour come barley and oats; and, failing these, it will have recourse to the grasses, which must have supplied food to the family before the cultivation of cereals yielded a more luxurious dietary.

The chinch bug has at times done considerable damage over a limited area in the south-eastern States, so much so that in 1809 the cultivation of wheat was abandoned in North Carolina for two years. Some thirty years later the chinchies again mustered in force in the same region, threatening the almost total destruction of the crops; but the disaster was providentially averted by a very wet season.

The chinch bug has also been found in the State of New York; but, happily, there is little prospect of its becoming a source of danger in any of the New England States. Within the last three or four years, its appearance in California has occasioned alarm; but so far it has not caused serious injury there. The region in which it exerts its most destructive sway comprises, according to the Report for 1887 of Mr Dodge, the statistician of the Agricultural Department, the whole or portions of certain States bordering the Mississippi and the Lower Missouri—Kansas, Missouri, Iowa, Illinois, and parts of Nebraska, Wisconsin, and Minnesota. Mr Dodge further states that 'in the area of their depredations the crops have an annual value of more than a fourth of the entire agricultural produce of the United

States.' According to the same authority, the estimated loss of corn, wheat, and oats in nine States in the year 1887 was in round numbers 79 million bushels of corn, 29 million bushels of wheat, and 19 million bushels of oats—a grand total of 127 million bushels destroyed by these insignificant insects. Well may they be reckoned first-class depredators!

When harvest is over and the cold weather comes and no more food can be obtained, the chinch bugs prepare to pass the winter in sleep. They seek out suitable crevices and crannies under heaps of rubbish, corn-stacks, fences, and like places, which seem to promise safe and comfortable retreats. The amount of cold which they sometimes endure is surprising. Dr Shimer mentions having thawed chinch bugs out of grass-stalks, and corn-husks, in which they were solidly frozen; and yet, when set free from their icy bands, they quickly revived, apparently none the worse for the cold. Very cutting winds, with the temperature fifteen or twenty degrees below freezing-point, have, however, proved trying to even their much-enduring vitality, and under such conditions many, whose winter-quarters were not sufficiently sheltered, were found to succumb. With the warm spring days they wake up and turn out of their hiding-places in search of food.

The eggs for the first brood are laid early in spring, usually underground, on the roots of their food-plants; but sometimes on the stalks, the latter being apparently chosen when the ground is very wet. The eggs are deposited in little clusters, and as we are told that one bug will lay five hundred eggs, and that there are usually two broods in a season—possibly in some cases even three broods—we need not be surprised at their rapid increase. The eggs are hatched in about a fortnight, and the young larvæ immediately set about feeding on the delicate spring wheat. Without food, they could not live or grow; and they do not fail to use the means for promoting growth, for they eat voraciously. So fast do they grow, that, as with other larvæ, the body outgrows the skin, and the old one has to be cast to give place to a larger coat. This is moult number one; then other moults follow at intervals; and at last, the larva has attained its full size. The colour changes with its successive new dresses, from pale yellow with orange markings, through various shades of red with yellow markings, to the duller shades which predominate in the mature larva. It then passes into the second or pupa stage; and finally is transformed into the full-grown winged insect, with blackish body and white wing cases, marked with a dark spot. The length of the insect is less than three-twentieths of an inch. By July or the beginning of August, the first brood has attained maturity, and in its turn it produces the same year a second brood.

Although the chinch bugs are provided with wings, they rarely use them. Only once or twice in the course of the year do they take flight, and never to escape threatened attack. Dr Shimer reports having tried several experiments to induce them to use their wings, but quite unsuccessfully—shaking the corn-stalks, beating them with branches, treading them under foot—nothing of the kind would make them rise into the air, though they have been known to do so when driven by starvation to search for fresh pastures.

Even then they prefer to travel on foot. In these migrations, vast hordes move from field to field.

Professor Cyrus Thomas, in *Bulletin* No. 5 of the United States Entomological Commission, devoted to these interesting pests, has pointed out that wet is very injurious to their health and constitution, and that two successive dry seasons are necessary for their development in really formidable numbers. Dr Thomas is able to hold out further encouragement to the farmer. He has studied the rainfall for a number of years, and finds a tendency to recurring climatic conditions in seven-year cycles. He believes that there is no danger of more than two chinch-bug years in every seven, and further, that no two are at all likely to be in succession. Then he goes on to point out that the farmer, by using these facts as a basis, guided by further observation, may take measures to defeat the enemy by cutting off his supplies. When a season has been dry, and there is evidence that the bugs are numerous, let the farmer sow some other crop than wheat or corn. In any case, let him avoid spring wheat. Winter wheat fares better, for it has acquired strength before the enemy attacks it in great numbers.

For the destruction of the chinch bugs when they are already in force, various means have been proposed in official and other publications by Professor C. V. Riley, Dr Thomas, Mr Howard, and other entomologists. A few of these may be briefly indicated. Make a trench in the line of advance, into which they will fall, cover up, and burn them. Set a fence of tarred boards in their way. Plant a strip of land with an agreeable food around a field so as to protect it. Plant a disagreeable crop in the same way and for the same purpose. Intermix with the crop to be protected small quantities of a distasteful plant (for example, flax amongst wheat). Treat an affected section of a field—(a) with hot soapsuds, or (b) with kerosene. Lay traps for the bugs by placing around infected fields a number of flat boards, under which they may congregate for winter shelter; then collect and burn them. Such are some of the methods by which the farmer may seek to protect his crops from the ravages of the chinch bugs.

The chinch bugs themselves have other enemies besides man. Birds, as a rule, will not eat them, as their unpleasant odour serves to protect them; but quails are not so fastidious; and so quails, as the allies of the farmer, are protected more or less in all States where the chinch bugs are, or possibly may be, troublesome. Then there are some insect enemies, though these are not numerous, as even many predaceous insects refuse the unsavoury chinch; but the ladybird, the insidious flower-bug—itself so like the chinch as to be often mistaken for it—the many-banded robber, the ground beetle, and even ants, do good service in this respect. Nor must mention be omitted of the larva of the lacewing fly, which has a marvellous appetite for chinch bugs. It will attack bug after bug without pausing until it has had a feast of a dozen or so, when it will seek repose in preparation for a fresh onslaught. The chinch bugs are also subject to disease, and sometimes an epidemic rages amongst them, felling its thousands or millions of victims.

So the American corn-grower need not despair.



Various plans of campaign are open to him in his war with the chinchies. He may harass the enemy and weaken its forces before it attacks him; he may carefully guard his outposts, and there make stand against the invader; or, when it has already reached his land, he—as other good generals have had to do—may sacrifice a part to save the rest, and having cleared the surrounding space, he may set fire to the enemy's camp. He may encourage the aid of plunder-loving mercenaries, vertebrate and invertebrate. And lastly, he may use his superior knowledge and skill in devising means to introduce the dire scourge of disease amongst the enemy, though this method of warfare savours of the cowardly, even when directed against chinch bugs.

#### HOW LIGHTNING IS PHOTOGRAPHED.

ONE of the most remarkable results of the modern advance of scientific photography is the application of the process to objects in rapid motion. Rigid stillness and prolonged exposure are almost unknown in these days of sensitive plates and instantaneous shutters, while half the agony of a visit to the photographer's may be abolished with the head-rest, which formerly reminded one of the tortures of the dentist's chair.

Birds in full flight, horses at a gallop, the finish of the boatrace, the rush of the express train, have all been pictured with unimpeachable accuracy by the greatest of all artists—the sun. The lightning-flash, however, offers a peculiar fascination to the photographer. A certain sense of sacrilege attaches to any attempt to 'take' so awful a manifestation of the mighty forces of Nature, and opportunities are so rarely presented in this country, that the feeling never wears away by familiarity. Three hot days and one thunder-storm are proverbially said to make up an English summer; and should that solitary thunder-storm occur in the daytime, the artist's opportunity is lost.

The problem is to obtain a representation of a vividly bright object some miles in length, which presents itself at uncertain intervals, and remains for an inappreciable instant. The difficulties appear great, but by patience they may be surmounted. Authorities differ as to the time of duration of the lightning-flash; but all agree that it is less than the ten-thousandth part of a second. The experiment which establishes this fact is due to the late Sir Charles Wheatstone. A disc, divided into alternate sectors of black and white, is caused to rotate very rapidly on its axis, and by daylight it appears of a uniform gray. If lightning, occurring in the dark, render the separate sectors visible, it is plain that the duration of the light must be less than the time of revolution through the breadth of one sector. The experiment was tried with a disc of sixty sectors and making one hundred and eighty revolutions in a second, so that the time of turning through the space of one sector is the 10,800th part of a second. When the disc, rotating with this velocity, is rendered visible by lightning, black and white sectors are seen with gray ones intervening. This shows that the flash is not absolutely instantaneous, for in this case the sectors would be seen sharply defined without any alternation of gray.

It is therefore very clear that any attempt to photograph the lightning in the ordinary way by exposing a plate upon a given flash would utterly fail; for we must remember that a most complex muscular and nervous process is gone through before the operator can attain his end. Let us for a moment consider this process, and imagine the artist waiting for a flash with the very best intentions of taking it. A thunder-cloud suddenly darts out a bright streak of light; its image impresses itself upon the retina of the observer's eye, and the optic nerve conveys the impression to the brain. A nervous stimulus is sent to the muscles of the hand, and the mechanical process of removing the cap from the camera ensues. But bodily action occupies time, and long, comparatively, before the sensitive plate is uncovered the flash is only a memory, and has actually vanished before the observer is conscious of its advent. It is therefore abundantly evident that a flash cannot be photographed by the ordinary process except by the merest accident.

But lightning-photography is a very simple operation after all. The whole secret is to wait for the lightning and to let it 'take' itself. The operator knows by previous experiments the exact focal length of his instrument, and so adjusts the camera that all distant objects are in distinct focus. He inserts his rapid plate and turns the lens in the direction whence the flashes come. He then counts the number of seconds between several flashes, in order to arrive at a fairly accurate estimate of the interval after which a flash may be expected. Allowing this time almost to expire, he removes the cap from the lens and awaits his flash. Upon its appearance he replaces the cap, and the operation is complete. The necessity for the darkness of night is readily seen, for if the exposure were made during the hours of daylight, the plate would be hopelessly fogged, should the flash not present itself at the exact moment, and the great advantage of the background of dark sky would be absent.

The most favourable conditions for lightning-photography occur when a thunder-storm happens at night and is accompanied by vivid flashes at frequent and fairly regular intervals.

#### YOUTH AND AGE.

WHEN Time was young, and the faint golden spears  
Of dawn-light stirred the curtains of the deep,  
So true our hearts—our wills—the mighty sweep  
Of unseen wings had borne us o'er our fears.

But shadows lie upon the folded years—  
Dim shadows of a twilight that must creep  
And creep, until forgetfulness and sleep  
Round in our world, kissing its doubts and tears  
Into a dream; and gathering the old,  
Old memories as a reaper, who among  
The fair rough hillocks of his harvest gold,  
Would leave the withered blossoms that are sprung  
From the rich soil of youth, and must unfold  
The fragrance of their hope while Time is young.

C. A. DAWSON.

Printed and Published by W. & R. CHAMBERS, Limited,  
47 Paternoster Row, LONDON; and EDINBURGH.